Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Second Annual Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services	)	IB Docket No. 07-252

SECOND REPORT

Adopted: October 14, 2008 **Released: October 16, 2008**

By the Commission: Commissioners Copps and Adelstein concurring and issuing separate statements.

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

1. This is the second annual report ("*Second Report*") by the Federal Communications Commission ("Commission") to the United States Congress on the status of competition in the markets for domestic and international satellite communications services as required by Section 703 of the Communications Satellite Act of 1962, as amended.[1] The *First Report*, released in March 2007, was retrospective and focused on competitive market conditions in satellite services segments back to 2000 and through calendar year 2006.[2] In this *Second Report*, we focus on calendar year 2007.

2. In this *Second Report*, we first discuss the structure of the satellite communications services industry and describe six wholesale markets or groups of markets (three domestic and three international) and two retail markets (both domestic). Within these markets, we calculate a range of standard economic indicators commonly used to assess competition and market performance. We also discuss the Commission's policies about foreign entry into the U.S. market, as well as U.S. companies' access to foreign markets.

3. We find in this *Second Report,* as we did in the *First Report,* that markets for commercial communications satellite services are subject to effective competition, notwithstanding certain changes in the communications satellite industry since release of the *First Report.* Moreover, consumers of communications satellite services continue to realize significant benefits in terms of service choice, innovations fostered by technological change and improvements in both space and ground segment, and improvements in service quality. Observed metrics are consistent with good market performance, notwithstanding constraints imposed by industry cost structure and persistent excess capacity.

4. We note that, because satellite-based multichannel video programming distributors ("MVPDs") (that is, Direct-Broadcast Satellite ("DBS") services) and mobile satellite services ("MSS") are discussed in other annual competition reports issued by the

[1] Amendment to Communications Satellite Act, Pub. L. No. 109-34, 119 Stat. 377 (2005), *codified at* 47 U.S.C. § 703.

[2] *Annual Report & Analysis of Competitive Market Conditions with Respect to Domestic & International Satellite Communications Services,* First Report ("*First Report*"), 22 FCC Rcd 5943 (2007).

Commission,[3] we do not address them here. In addition, we do not address the Satellite Digital Audio Radio Service ("SDARS") in this Report. Rather, we refer the reader to the Commission's recent action on the transfer of control application filed by one of the SDARS operators.[4]

[3] *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, Twelfth Annual Report, 21 FCC Rcd 2503 (2006); *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993: Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Twelfth Report, 23 FCC Rcd 2241 (2008).

[4] *See Applications of XM and Satellite Radio Holdings, Inc.*, *Transferor, and Sirius Satellite Radio Inc., Transferee*, *For Consent to Transfer Control,* Report and Order, MB Docket No. 07-57, FCC 08-178 (released August 5, 2008) (*SDARS Merger Order*).

II. INTRODUCTION

5. Section 703(b) of the Communications Satellite Act of 1962, as amended (the "Act"),[5] directs the Commission to report annually to Congress about "competitive market conditions with respect to domestic and international satellite communications services," including:

> (1) an identification of the number and market share of competitors in domestic and international satellite markets; (2) an analysis of whether there is effective competition in the market for domestic and international satellite services; and (3) a list of any foreign nations in which legal or regulatory practices restrict access to the market for satellite services in such nation in a manner that undermines competition or favors a particular competitor or set of competitors.

A. Sources of Information

6. On November 7, 2007, the International Bureau released a Public Notice (the "*Notice*") asking for comments and information for this *Second Report.*[6] The Satellite Industry Association ("SIA") filed comments in response to the *Notice*.[7] We used the responsive filing to reach our conclusions herein. In addition, we relied upon a variety of publicly available sources of industry data. These sources included: company filings with the Securities and Exchange Commission; data compiled and released by trade associations and by other government agencies; reports by securities analysts and other research companies and consultants; company news releases and websites; newspaper and periodical articles; and various public Commission filings, decisions, Reports, and databases.[8]

B. Structure and Analytical Approach of Report

7. In this *Second Report*, we begin with an overview of the satellite communications industry and in so doing we review the industry's current revenues. Then we define the relevant markets that comprise the industry and which we use in our later economic analysis of the industry.[9] As we noted in the *First Report*, although section 703(b)(2) directs the Commission to analyze "whether there is effective competition in the market for domestic and international satellite services,"[10] the term "effective competition" is not defined in section 703 or in the context of satellite services more generally. Accordingly, to analyze effective competition, we

---

[5] 47 U.S.C. § 703(b). The Act is 47 U.S.C. §§ 151 *et seq.*

[6] *IB Invites Comment for Second Annual Report to Congress on Status of Competition in Satellite Services Market,* Public Notice, 22 FCC Rcd 19429 (2007).

[7] The Consumer Coalition for Competition in Satellite Radio ("C3SR") filed a written *ex parte* presentation on March 28, 2008. Letter from Julian L. Shepard, Counsel for C3SR, to Marlene H. Dortch, Secretary, FCC (filed March 28, 2008). Since this Report does not discuss SDARS, C3SR's *ex parte* comments are beyond the scope of the Report and we will not address them.

[8] *See, e.g.,* Annual Reports and 10-Ks for 2007 filed by SES Americom and Intelsat; Comments of the Satellite Industry Association, filed in this docket IB 07-252; Hughesnet presentation to Cowen &Co. Annual Meeting in February 2008; Space News, "ViaSat, Loral, Eutelsat Team to deliver Ka-band Broadband Services," January 14, 2008 and Lichtman Research Group "Research Notes", 3Q 2007.

[9] As previously noted, satellite-based MVPD and MSS services are addressed in other Commission reports and SDARS will not be addressed here.

[10] 47 U.S.C. § 703(b)(2).

rely on a range of standard indicators commonly used for the assessment of effective competition.

III. MARKET STRUCTURE

A. Overview of the Satellite Communications Industry

8. For purposes of this *Second Report*, we consider the satellite communications industry to consist of those entities that participate directly in the provision of communications services that involve the use of satellite infrastructure, such as satellite space stations (the "space segment") and earth stations (the "ground segment"). These various entities ultimately participate in the three wholesale and two retail markets that we define below.[11] We do not consider other related industries such as satellite space and earth station manufacturing and the satellite launch industry. Also, as noted previously, we do not report on industry segments that are discussed in other Commission Reports, nor do we address SDARS in this Report. Rather, we refer the reader to the Commission's recent action on the transfer of control application filed by one of the SDARS operators.[12]

9. The primary providers of the space segment of satellite communications are Fixed Satellite Service ("FSS") operators. These operators, in general, provide services from satellites located in geostationary orbits to earth stations in fixed locations. In the United States today, there are two principal FSS operators: SES Global, through its subsidiaries SES Americom and SES New Skies, and Intelsat, the successor to the intergovernmental organization INTELSAT. There are also a number of smaller operators, such as Eutelsat, Satmex, and Telesat. DBS providers EchoStar and DirecTV also provide or plan to provide FSS.

10. The ground segment of satellite communications consists of any number of companies that operate earth stations with the capacity to communicate with space stations. These include, among others, teleport operators, who often operate numerous fixed earth stations capable of communicating with multiple satellites, and network service integrators, that often obtain blanket authorizations for very small aperture earth stations to be integrated into larger communications networks. Heavy users of satellite communications services such as media companies, oilfield companies, and nationwide retailers sometimes self-supply their own ground segment.

11. Current Industry Revenues. Although worldwide revenue growth in recent years has been substantial for the communications satellite services covered by this *Second Report,* it is important to note that such revenues are small relative to other satellite services, such as satellite television. Worldwide revenues for satellite television were, in U.S. dollars, $40.2 billion in 2005; $46.9 billion in 2006; and $55.4 billion in 2007. By contrast, worldwide revenues for fixed communications satellite services, including satellite end-user broadband were $10.1 billion in 2005; $12.1 billion in 2006; and $14.3 billion in 2007.[13]

---

[11] As explained further below, each wholesale market can be divided into a domestic and an international market.

[12] *See SDARS Merger Order*.

[13] These figures are taken from "The State of the Satellite Industry Report," page 9, dated June 2007 and June 2008, prepared by the Futron Corporation. The June 2007 Report was filed by SIA in response to the *Notice* requesting comments for this *Second Report*. SIA released the June 2008 Report on June 11, 2008. For purposes of revenue calculation, Futron defines Fixed Services/Other as transponder agreements, network management services; remote sensing and end-user broadband.

12. Of the communications satellite service worldwide revenues, revenues for fixed satellite services fluctuated from 2001 through 2004, but have shown substantial growth from 2005 through 2006 (19.8 percent) and 2006 and 2007 (18.2 percent), reaching total revenues of $14.3 billion in 2007.

B. Market Description and Identification of Market Participants

13. The *First Report* described the concepts, drawn from antitrust law, of relevant markets (both "product" and "geographic") and "market participants" or competitors in those markets.[14] We use that same analytical framework in this *Second Report*.[15] The markets and groups of markets we describe in this *Second Report* are:

Domestic
- *Wholesale Services*
  - Capacity for Video Contribution
  - Capacity for Video Distribution
  - Network Services
- *Retail Services*
  - Fixed Satellite Broadband Services
  - Mobile Video Broadcasting Service (emerging)

International[16]
- *Wholesale Services*
  - Capacity for Video Contribution
  - Capacity for Video Distribution
  - Network Services

1. Domestic Wholesale Markets

14. As we did in the *First Report*, we describe three wholesale product market groups for domestic satellite communications services.[17]

15. Capacity for Video Contribution. This grouping of services offers point-to-point capacity for full-time contribution to, or occasional use by, providers of media services within the United States. One example would be the transmission of content from a place where an event is happening to the production office of a media company that edits it for later broadcast. This group of services includes full time and occasional use service, pre-negotiated and spot markets, and other components. Satellite-based participants in this market group include FSS

[14] *First Report,* 22 FCC Rcd at 5963-66, ¶¶ 27-35.

[15] We emphasize, as we did in the *First Report*, that the market descriptions used herein are intended to facilitate discussion of satellite markets and services required by section 703 and may not reflect the appropriate markets to be considered in other Commission proceedings, such as merger reviews, rulemakings, and other reports to Congress. *First Report,* 22 FCC Rcd at 5963, ¶ 24, 5964, ¶ 27, 5966, ¶ 33.

[16] To simplify analysis, we do not consider each international route separately as we might in other contexts.

[17] *First Report,* 22 FCC Rcd at 5966-77, ¶ 36. Domestic "wholesale" markets consist of services that are provided to business and government users within the United States for their further provision to retail end users or consumers. "Retail" product markets consist of services that are provided directly to retail consumers (mostly individuals and households) in the United States. *Id.*

satellite operators;[18] teleport operators; resellers; other specialized program providers engaged in occasional use for satellite news gathering; EchoStar; large media entities such as CBS, which self-supply some capacity; and all foreign-licensed FSS operators listed on the Commission's Permitted Space Station list. Other participants in this market, on certain specific routes, are providers of wireline communications transmission services such as Level 3, AT&T, and Verizon.

16. We observe two facts about this market group, which are also true of other groups we describe below. First, the ability of each satellite-based market participant to participate in this market will depend on the coverage areas of its satellites.[19] Second, some participants in this market group use technologies other than satellites.

17. Capacity for Video Distribution. Capacity for Video Distribution is the point-to-multipoint transmission of entertainment and news content between points within the United States. An example is a broadcast network's transmission of a program from its production center to its many owned and affiliated stations and the headends of cable operators and DBS providers. Participants in this market group include FSS operators; EchoStar; some local and regional teleports; the large media entities and terrestrial providers mentioned above; and all foreign-licensed satellite operators listed on the Commission's Permitted list.

18. Network Services. Network Services consist of the provision of point-to-point telecommunications transmission paths to telecommunications operators and corporate users. This group of services consists of two components. The first component is "backbone" satellite capacity[20] used for point-to-point trunking for voice, data, or Internet traffic; "backhaul" of communications services;[21] and redundancy and restoration of communications services when primary technologies fail. Participants in this component of the network services product market include FSS satellite operators; some teleport operators; all foreign-licensed satellite operators listed on the Permitted list; resellers of satellite capacity; terrestrial wireline and wireless carriers where they have network facilities; some self-supplying carriers and government users; and "network integrators," which are companies that supply their retail customers with network services.

19. The second component of the Network Services market group consists of other fixed communications services between points within the United States, such as specialized voice and data services that a business uses to communicate within the United States between offices or between a location and many remote locations. These services may have steady or sporadic traffic patterns and may or may not be IP-based, symmetrical, and narrowband or broadband. Participants in this Network Services market group include the FSS satellite operators; all foreign-licensed FSS satellite operators listed on the Permitted list; several "very small aperture terminal" (VSAT) companies (including Hughes, iDirect, Gilat, and ViaSat); some teleport operators; the terrestrial participants described above; and some self-supplying

[18] These include Intelsat, Loral, and SES Americom.

[19] *See First Report,* 22 FCC Rcd at 5966, ¶ 35, 5969, ¶ 40.

[20] We define "backbone" as referring to use on major routes with large volumes of traffic in regions, such as East Coast to West Coast.

[21] We define "backhaul" as transmitting from a remote site or network to a central or main site, usually over a high capacity line and for purposes of efficient network management.

military users and large enterprises (for example, the oilfield services provider Schlumberger, and Dow Jones).

20. As more fully discussed in the *First Report,* the geographic component of the Video Contribution and Distribution product market groups described above is national. This determination follows, as in the *First Report,* the definition of a geographic market described in the U.S. Department of Justice-Federal Trade Commission, *Merger Guidelines*.[22] This definition delineates a geographic market as a region where a hypothetical monopolist that was the only present or future producer of the relevant product at locations in that region would profitably impose at least a "small but significant and nontransitory" increase in price, assuming that the terms of sale for all products produced elsewhere remained constant.[23] In terms of both the video contribution and distribution markets described above, communications satellites can be configured to provide coverage throughout the United States, although the amount of capacity and power available at any specific orbital location will vary with the antenna configuration, frequency band, power, and the existing capacity utilization of any specific satellite.[24] Additionally, large users of video contribution and distribution communications services, such as broadcast networks owning local stations, are licensed by the Commission to operate only within the United States. For these reasons, the relevant geographic market for both video contribution and distribution is national. The geographic component of the Network Services group discussed above is regional, where a geographic region may cross national boundaries. For example, VSAT operators may configure their antenna coverage for private corporate networks to include multiple countries where the firm does business. Competing VSAT networks and other network services firms attempt to replicate such coverage that is tailored to a network services customer's unique geographic requirements. For these reasons, the relevant geographic market for Network Services is regional.

2. Domestic Retail Markets

21. We describe only one domestic retail market for satellite communications services in this Report and we note a second market that may be emerging.

22. Fixed Satellite Broadband Service. Fixed Satellite Broadband Service consists of point-to-point high-speed (or "broadband") fixed satellite Internet access service provided directly to retail consumers in the United States for a fee. As we noted in the *First Report,* we define "high-speed" or "broadband" to describe services that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps) in at least one direction.[25] In

[22] U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines, 57 Fed. Reg. 41552 (dated Apr. 2, 1992, revised, Apr. 8, 1997) ("Merger Guidelines").

[23] Merger Guidelines, Section 1.21 at p. 8-9. Application of this definition of a geographic market means that the geographic boundaries of a market are determined by the availability of alternative sources of supply of the relevant product that a consumer would switch to in response to a hypothetical price increase. Once all alternative sources of supply are monopolized in theory and the consumer has no reasonable substitutes in the region left to avoid the hypothetical monopoly price increase, the geographic market is determined.

[24] Satellite providers may need to add additional satellite capacity to provide the geographic coverage required to provide the same transponder services to Alaska and Hawaii as provided to the other 48 States, given the distance separating Alaska and Hawaii from the contiguous States.

[25] *First Report,* 22 FCC Rcd at 5971, ¶ 52; *See also, FCC Report, High-Speed Services for Internet Access: Status as of June 30, 2007,* n. 1. (rel. March 19, 2008), (*2007 High-Speed Internet Access Report)*.

the Commission's 706 Broadband Report, this service is referred to as "satellite-based Internet access."[26] The major participants in this market group are WildBlue, Hughes, and Starband, a subsidiary of Gilat Satellite Networks.[27]

23. Mobile Video Broadcasting Service. We note the possible emergence in the next year of a domestic retail market for hand-held, satellite-based Mobile Video Broadcasting to hand-held terminals for a fee. ICO and Alcatel plan testing of such a service this year,[28] although a commercial offering is farther in the future.

3. International Relevant Markets

24. The international product market groups of interest to this *Second Report* are those for communications where one originating or terminating point is in the United States and another is outside it. As in the *First Report*,[29] we describe three such markets, all wholesale. They are Capacity for Video Contribution, Capacity for Video Distribution, and Network Services. Functionally, they are the same as the same-named markets described above. For the reasons stated in the *First Report,* the geographic component of each of these market groups is national.[30] As in the *First Report,* for reasons of economy, we omit any detailed discussion of these international product market groups. Paragraphs 65-67 below, however, discuss barriers to entry by U.S. companies into such markets.

C. Market Concentration

1. Recent Mergers and Other Transactions in Commercial Satellite Markets

25. Transactions within the satellite industry include company mergers and acquisitions, privatizations and public offerings, joint ventures, divestitures and other split-offs, bankruptcy and reorganizations, and new entry. Mergers and acquisitions eliminate a market participant which may, other things remaining the same, tend to diminish the intensity of rivalry among the remaining competitors if the number of competitors prior to the merger were few.[31]

---

[26] *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Fifth Report, ("*706 Report*") FCC 08-88, at n. 72.

[27] These three companies were also mentioned in the *706 Report* for providing satellite-based high-speed Internet access. In addition, although not mentioned in the Commission's most recent *706 Report,* mobile satellite based Inmarsat, which operates through resellers, is also a participant in this market.

[28] Alcatel-Lucent, *ICO and Alcatel-Lucent to demonstrate first Mobile TV broadcast in North America based on the DVB-SH satellite/terrestrial standard at CES* (Dec. 19, 2007), http://www.alcatel-lucent.com/wps/ portal/!ut/p/ kcxml/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLd4x3tXDUL8h2VAQAURh _Yw!!? LMSG _CABINET=Docs_ and_Resource_Ctr&LMSG_CONTENT_FILE=News_Releases_2007/News_Article_000757.xml (visited Feb. 14, 2008).

[29] *First Report,* 22 FCC Rcd at 5973-5, ¶¶ 58-63.

[30] *First Report,* 22 FCC Rcd at 5973, ¶ 63.

[31] If the industry prior to the merger of two competitors in the same market included many independent firms, then the effect on rivalry post-merger would be expected to be nil unless the merging firms tend to hold large market shares of an otherwise fragmented market. Even then, a merger of firms holding substantial market share may *intensify* rivalry post-merger if the merger results in a "maverick" firm that disrupts the traditional dimensions of competitive rivalry by introducing new productive technology, product innovations, or a new focus on product or service quality that forces incumbent competitors to compete in this new dimension.

Nevertheless, the merger of competitors may result in the creation of a stronger competitor with greater economies of scale in production, improved access to capital for investing in research and development, product and service improvements, and the implementation of competitive strategies focused on innovation. Such benefits of the merger may lead to more intense competition in price, quality, and innovation notwithstanding the loss of an independent but weaker competitor in the relevant product and geographic markets.

26. In 2007, the Commission approved four major transactions involving the U.S. satellite industry. In doing so, the Commission determined that the transactions would not harm competition in the relevant U.S. markets. These four transactions include: the Loral Skynet Corporation-Canada, Inc. transaction;[32] the Stratos Global transaction;[33] the Telenor Satellite Services-Inceptum transaction[34] and the Intelsat-Serafina transaction.[35]

2. Measures of Market Concentration

27. In this Section, we analyze data indicating market structure and ownership in wholesale and retail markets that include satellite services, to examine the extent of market concentration in the markets for satellite services.[36]

28. Concentration in Wholesale Markets. Using the market descriptions from Section III.B. above, we differentiate the relevant product markets between wholesale and retail markets.

---

[32] *BCE Inc. and Loral Skynet Corporation, Transferors/Assignors, and 4363205 Canada, Inc., 4363213 Canada, Inc., and Skynet Satellite Corporation, Transferees/Assignees, for Consent to Transfer of Control or Assignment of Licenses and Authorizations Held by Telesat Canada, Able Infosat Communications, Inc., Loral Skynet Corporation, and Loral Skynet Network Services, Inc., and Petitions for Declaratory Ruling that the Transaction is Consistent with Section 310(B)(4) of the Communications Act*, 22 FCC Rcd 18049 (2007). The Commission found that the transaction would be unlikely to pose any competitive harm because neither Loral Skynet nor Telesat had a significant presence in the United States or to/from the United States to foreign points. The Commission also reasoned that Intelsat and SES, both larger providers of satellite-based communications services, present alternative sources for end-users.

[33] *Stratos Global Corporation, Transferor, Robert M. Franklin, Transferee, Consolidated Application for Consent to Transfer of Control*, Memorandum Opinion and Order and Declaratory Ruling, FCC 07-213, 22 FCC Rcd 21328, 21330, ¶¶ 2-3 (2007). The Commission concluded that approval of the transaction would serve the public interest, noting that the terms of the trust (the Commission allowed Stratos Global to transfer its licenses and authorizations of its subsidiaries to a Canadian trust for the benefit of CIP Canada Investments and Inmarsat, through a subsidiary, was allowed to finance CIP Canada's acquisition of Stratos' stock) would ensure that Stratos did not favor Inmarsat or otherwise interfere with competition.

[34] *Telenor ASA, Transferor, and Inceptum 1 AS, Transferee, Seek FCC Consent to Transfer Control of Licenses and Authorizations and a Declaratory Ruling on Foreign Ownership*, DA 07-2163, Public Notice, 22 FCC Rcd 9325 (2007). Although the transaction would ultimately result in the merger of two satellite services providers, Telenor and France Telecom Mobile Satellite Communications (FTMSC), the Commission found no evidence that the proposed transaction would harm competition, particularly given FTMSC's limited presence in the United States.

[35] *Intelsat Holdings, Ltd., Transferor, and Serafina Holdings Limited, Transferee, Consolidated Application to Transfer Control of Holders of Title II and Title III Authorizations,* FCC 07-220, 22 FCC Rcd 22151, ¶ 1 (2007). The Commission determined that the transaction would not harm competition because the transaction would not result in a consolidation or increased market power in the relevant U.S. markets. In particular, neither Serafina nor its investors held an interest in any telecommunications, satellite, or media company operating in the same market as Intelsat in the United States.

[36] For a detailed discussion of theoretical underpinnings of measures of market concentration, *see First Report,* 22 FCC Rcd at 5976-78, ¶¶ 69-71.

We then apply the appropriate measures of market concentration to determine the extent of concentration in those product markets.

29. We consider market share in analyzing the competitive relationship between firms in an aggregated market for domestic wholesale satellite services. This aggregated market combines the relevant markets, described above, for Video Contribution, Video Distribution, and Network Services. Market shares in this aggregated combined market may be measured in several different ways using different criteria, including, for example, revenues, value of the product, or capacity utilization.

30. The satellite operators in this aggregated market all use FSS. Capacity utilization by operators in this market shifts with customers' actual usage of contracted capacity, conclusion of new contracts, and the launch or decommission of spacecraft. Table 1 lists fixed satellite transponder capacity as utilized by market participants in this aggregated market. We note that Table 1 does not include data on capacity for video distribution and network services provided by other market participants, such as terrestrial providers or mobile satellite providers active in the network services markets. As a result, Table 1 does not constitute a complete analysis of market shares. Because it does not include data on the capacity provided by other market participants, Table 1 most likely overstates each satellite operator's share of capacity. We also note that, because of Futron's data reporting, 2007 data include separate entries for the merged entities of Intelsat and PanAmSat and of SES Americom and New Skies.

TABLE 1

SHARES OF UTILIZED TRANSPONDER CAPACITY BY TYPES OF DOMESTIC WHOLESALE SERVICES IN DOMESTIC WHOLESALE RELEVANT MARKETS[37]

Operators	Video Contribution and Distribution %			Network Services %		
	2001	**2006**	**2007**	**2001**	**2006**	**2007**
Intelsat	5	15	38	9	42	50
PanAmSat	33	29	N/A	10	13	N/A
Loral Skynet	23	3	2	25	3	3
SES Americom	33	34	27	37	25	25
SES New Skies	N/A	3	4	N/A	9	8
Other	7	15	28	20	9	14

Source: Futron Corporation.

31. Table 1 shows that in 2007, subsequent to the merger with PanAmSat, Intelsat provided 38% of satellite transponder capacity in the wholesale video contribution and distribution services markets and 50% of the wholesale network services markets. However, Intelsat's share of the wholesale video contribution and distribution and network markets is smaller than the combined market shares of Intelsat and PanAmSat prior to the mergers. SES Americom, the next largest provider of wholesale transponder capacity, also experienced a steady decline in its share of markets over the last seven years.[38]

32. Concentration in Retail Markets. Unlike the wholesale market, where satellite operators, resellers, local exchange carriers ("LECs"), and VSAT and teleport operators face a relatively small number of buyers, sellers in the retail markets face thousands and even millions of individual consumers, households, and businesses as potential buyers. Customers in the retail market do not have an individualized relationship with sellers except for critical services such as billing. Moreover, in some retail markets, all customers pay the same price for the same service, except for specific differentiation due to subscribers' choice of service tiers, promotional offers, or certain specific customer groupings.[39]

33. In retail markets, where sellers actively compete in terms of price and conditions of service, market concentration is expected to have a more pronounced effect on market behavior and price-cost margins. For a variety of reasons, including the nascent nature of the

[37] Percentages reflect the operators' proportion of capacity actually utilized for each service for the United States for the second quarter of each year noted.

[38] Globally, the industry consulting firm Euroconsult reports that Intelsat/PanAmSat and SES Global/New Skies Satellite accounted for 50% of the revenues from wholesale satellite services in 2005. Moreover, according to Euroconsult, the top 10 operators in the wholesale market for satellite services accounted for 87% of total wholesale market revenues in 2005. *See* Euroconsult, *Facts and Figures on the Performance of the Satellite Business Globally* (June 2006).

[39] *Intelsat-PanAmSat Order*, 21 FCC Rcd at 7385, ¶ 31.

market, we do not have sufficient market share data to calculate concentration in the retail market for Fixed Satellite Broadband Service or Mobile Video Broadcasting.

D. Market Entry Conditions

1. Introduction

34. In this section, we discuss various methods of entry into the markets for communications satellite services. We then identify and analyze specific factors that affect the ease or difficulty of entry into the identified markets. This discussion is general rather than market-specific. That is, it focuses on factors that affect the extent and intensity of competitive rivalry. These factors are industry cost structure, industry dynamics, spectrum allocation and orbital location, and both domestic and foreign public policies toward the communications satellite industry.

2. Methods of Entry

35. We describe three types of entry into a communications satellite services market: (1) facilities-based integrated entry; (2) market entry by acquisition; and (3) resale non-integrated entry. Any type of entry may be viewed as an investment decision, where the present value of forecast revenues over the investment horizon (the economic life a satellite) must exceed all relevant costs for entry to be profitable. In economic terms, each of these entry types implies somewhat differing forecast revenues over time and differing costs of market entry. Later in this Section, we discuss the general factors affecting the ease of market entry, and how those factors affect each type of market entry differently.

36. Facilities-Based Integrated Entry. Historically, each communications satellite operator entered communications satellite services markets by obtaining for itself the necessary spectrum and orbital assignments; designing spacecraft and purchasing such spacecraft from spacecraft manufacturers; launching the spacecraft; and designing, purchasing, and operating the ground network tracking and control facilities essential to operating a satellite system. Additionally, the operator employed its own technical, marketing, and administrative staff for most operating functions.[40] The entry of facilities-based satellite operators in any particular communications satellite services market adds transponder capacity to that market and, depending on the quantity of capacity already available in that market, may affect the pricing of transponder capacity.

37. The cost of market entry as a facilities-based, integrated entrant includes the substantial investment in both space and ground segment; marketing and advertising costs; research and development costs essential to developing new services; and investment in establishing supplier and distribution networks, among other startup costs. Such costs represent sunk investments for the satellite operator entrant which incumbent satellite operators have already incurred and do not as a result affect either the incumbent's marginal cost of production or pricing decisions in the short run.[41] The satellite operator entrant may need to incur additional

[40] As a practical matter, facilities-based entrants and incumbent carriers often contract out some parts of their operations as well as lease some transponder capacity from other carriers. The basic organizing strategy of facilities-based carriers remains, however, one of ownership and operation of its own facilities.

[41] A sunk cost is a cost incurred for an asset or activity in a specific market and that cannot be redeployed in a different market.

sunk expenditures, such as advertising, marketing, and sales costs, to both inform and persuade customers of the incumbent satellite operators to switch to the transponder services offered by the entrant. To the extent that incumbent satellite operators did not need to incur such sunk market development costs or to a lesser extent than the entrant, then such incremental sunk costs borne by the entrant but not the incumbent satellite operators represent a type of barrier to entry. Therefore, the entrant must overcome barriers to entry, in addition to the entry costs that both entrants and incumbents must bear, to compete in the relevant market.[42] Substantial fractions of the marketing, advertising, research and development, and supplier and distribution network setup costs borne by a satellite operator entrant are sunk and represent substantial barriers to entry as a facilities-based, integrated satellite operator.

38. Market Entry by Acquisition. An alternative strategy for a new carrier entering a communications satellite market is purchasing an incumbent satellite operator. Unlike facilities-based integrated entry, market entry by acquisition does not add new satellite capacity. Rather, such entry often brings new management to the incumbent satellite carrier with some shifts in competitive strategy, types of services offered, and some innovations in network management and service development. Depending on the current state of industry demand, the financial condition of the acquired operator, and the quantity and quality of satellite capacity acquired, market entry by acquisition may be cheaper and faster than facilities-based entry.

39. Although market entry by acquisition does not change the number of independent competitors, it may result in changes in operator conduct observed in the relevant markets. For example, some communications satellite service markets are supplied by two or three satellite operators that are generally aware that their pricing decisions are dependent to some extent on similar decisions by their competitors.[43] New ownership of an incumbent satellite operator may affect market equilibrium by changing the terms and conditions of new transponder leases or abandoning some services and expanding the marketing of others. The result of such disruptive behavior may be somewhat lower or higher prices prior to entry of the new owner, or an injection of rivalry in a different direction such as quality of service.[44]

40. Resale Non-Integrated Entry. Entrants may also enter a satellite communications market as a resale, non-integrated service provider. Rather than planning, launching, and operating its own satellites or buying an existing facilities-based satellite operator, the entrant may lease the entire space segment and ground segment network control services required to operate as a communications satellite operator. Both vertical and horizontal integration of the resale firm, *i.e.,* direct managerial control over upstream inputs of production (vertical integration) and the scale and scope of production within the firm (horizontal integration) are replaced by long-term contractual relationships. A major advantage of entry as a resale firm is the speed of entry compared to designing, building, and launching a communications satellite network or buying an incumbent satellite operator. Contracts with vendors can be negotiated reasonably quickly, compared to years for the other methods of market entry. Additionally,

[42] This notion of barriers to entry follows Stigler. *See* George Stigler, *Barriers to Entry, Economies of Scale, and Firm Size* in George Stigler, THE ORGANIZATION OF INDUSTRY at Chapter 6 (Richard D. Irwin, 1968).

[43] This interdependence of pricing decisions in most cases does not rise to the level of explicit or tacit collusion.

[44] The entrant may be a maverick firm that disrupts the former market equilibrium, especially if such equilibrium reflects coordinated or collusive behavior. *See* U.S. Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines*, 57 Fed. Reg. 41552, § 2.12 (dated Apr. 2, 1992, revised, Apr. 8, 1997).

expanding capacity can be done in smaller increments, *i.e*., on an individual transponder basis rather than an entire spacecraft, so that capacity more closely tracks growth in traffic with minimal non-revenue producing excess capacity. Major disadvantages to entry as a resale communications satellite firm are the potential unavailability of transponder capacity in markets that develop more rapidly than anticipated or insufficient restoration capacity in the event of transponder failure. Such business risks represent the economic trade-offs for achieving faster market entry and a closer alignment of market demand with required transponder capacity.

41. Conclusion. In recent years, entry both by acquisition and by resale have emerged as alternative ways to inject rivalry into specific markets for communications satellite services, and have tended to offset to some extent the possible adverse effects of increasing market concentration on market performance.[45] As a consequence of these alternative methods of market entry, competitive rivalry in markets for communications satellite services may remain vigorous notwithstanding increasing concentration in some market segments.

3. Industry Cost Structure

42. The cost structure of firms in an industry is one of a number of significant factors which influences the ease and speed of entry of new firms into the industry. The cost structure of firms may also be a useful predictor of certain types of firm behavior, such as pricing, once the firm has entered the industry and competes with both incumbent firms and other recent entrants.[46] The following discussion considers the implication of communications industry cost structure for competitive rivalry in satellite services.

a. The Cost Structure of Communications Satellite Carriers

43. The technology of a communications satellite network determines to a great extent the cost attributes of the communications satellite business. For example, a fixed communications satellite network that provides global connectivity must have at least three spacecraft in geostationary orbit above the earth.[47] It must also have a ground network for controlling the movement of spacecraft and managing telecommunications traffic to and from the transponders on the satellite. Consequently, the capital investment in both space and ground segment and satellite launch is large, mostly fixed, and largely sunk.

44. An enterprise's cost structure provides one indicator of the quantitative significance of total fixed costs relative to total variable costs.[48] Table 2 below calculates the cost structure for Intelsat and PanAmSat prior to their merger in 2006, and for SES. As shown in column 3 ("Cost Structure"), the estimated cost structure for the three satellite carriers ranges from 2.74 to 3.55, indicating in all cases a cost structure dominated by fixed costs.

---

[45] Continued growth in the number and capacity of fiber optic cables as substitute media have had similar effects on some markets for communications satellite services.

[46] This discussion both reviews and extends in certain respects the discussion of *Industry Cost Structure* included in the *First Report* on competition in the communications satellite industry. *See First Report*, 22 FCC Rcd at 5981-85, ¶¶ 85-92.

[47] The concept of a global communications satellite network requiring at least three spacecraft was first proposed by Sir Arthur C. Clarke in 1945. See Arthur C. Clarke, *Extra-Terrestrial Relays: Can Rocket Stations Give World-wide Radio Coverage?*, WIRELESS WORLD 305-08 (Feb. 1945).

[48] Econometric estimates of total cost functions for communications satellite carriers are beyond the scope and data resources available for this *Second Report*.

TABLE 2

ESTIMATED COST STRUCTURE FOR SELECTED SATELLITE OPERATORS IN DOMESTIC WHOLESALE RELEVANT MARKETS

Satellite Operator	Proxy Fixed Cost ($ millions) (1)	Proxy Variable ($ millions) (2)	Cost Structure (1)/(2)
Intelsat	1,554	438.1	3.55
PanAmSat	610.5	223.1	2.74
SES	1,567.3	483.8	3.24

Source: *First Report*, Table 5

45. Further insight into the nature of communications satellite industry cost structure is provided by estimates of operating leverage for selected satellite carriers. Table 3 reports estimates of the degree of operating leverage ("DOL") for Intelsat (post-merger with PanAmSat), SES, and PanAmSat (pre-merger with Intelsat). The estimates of DOL in Table 3 are a measurement of the extent of business risk facing satellite carriers. By definition, DOL measures, in percentages, the sensitivity of the firm's net income to changes in sales revenue. Taking Intelsat as an example, the estimated DOL elasticity coefficient of 3.43 means that a ten percent increase (decrease) in sales revenue will result in nearly a 35 percent increase (decrease) in net income, a substantial fluctuation in net earnings resulting from a moderate change in sales revenue. The estimates of DOL reported in Table 3 are highly suggestive of significant business risk that communications satellite carriers face in their business operations.[49] Table 3 also shows that the communication satellite industry faces a capital intensive cost structure. In column (4), DOL ranges from 1.94 for pre-merger PanAmSat to 3.43 for post-merger Intelsat. DOL viewed as an elasticity coefficient will be 1.00 if the firm incurs no fixed costs and presumably makes no investment in durable capital assets. Because the estimates of DOL are in excess of 1.00, it is shown that the communications satellite industry operates with a capital-intensive cost structure as also shown in Table 2.[50]

TABLE 3

DEGREE OF OPERATING LEVERAGE FOR SELECTED SATELLITE OPERATORS IN DOMESTIC WHOLESALE RELEVANT MARKETS

Satellite Operator	(1) Total Sales Revenue (000)	(2) Total Variable Cost (000)	(3) EBIT (000)	(4) DOL [(1) - (2) / (3)]
Intelsat	1,662,666*	284,550	401,523	3.43
SES	1,610,700**	164,900	613,100	2.36

[49] A complete assessment of business risk in any industry requires more than calculations of DOL at a point in time and the observations presented in the text are suggestive rather than definitive. A complete analysis of business risk in the communications satellite industry both today and prospectively is beyond the scope of this *Second Report*.

[50] This fundamental structural attribute of the communications satellite industry remains true even if the carrier owns no satellite capacity itself. Long term leases of transponder capacity typically include recurring lease charges that are equivalent to the fixed costs of owning satellite capacity.

PanAmSat	229,225***	44,059	95,518	1.94

* U.S. Dollars, period ending December 31, 2006.
** Euros, period ending December 31, 2007.
*** U.S. Dollars, period ending December 31, 2005.[51]

46. Other notions of the industry cost structure also can be useful in understanding communications satellite networks. For example, each spacecraft in geostationary orbit may be viewed as a plant, the technical unit of production within a firm.[52] From this perspective, a communications satellite operator is a multi-plant firm. Moreover, each plant, or spacecraft, produces multiple outputs, namely, different transponder services which are differentiated in terms of frequency band, power, geographical coverage, and contractual terms of transponder access and usage (such as long term contracts versus occasional use). The multiple transponders on any given spacecraft share a common platform – the spacecraft bus and other components supporting all transponders on the spacecraft.

47. Given the intrinsic "lumpiness" or indivisibility of a communications satellite as an investment,[53] it is reasonable to assume that the production of multiple, simultaneous transponder services on any given spacecraft reflect substantial plant-level economies of scope. Additionally, increasing the production and sale of transponder services will reduce plant-level average fixed cost, resulting in substantial economies of density[54] so long as variable costs remain small relative to fixed costs. These plant-level cost characteristics of a communications satellite reveal the importance of achieving rapid growth in the "fill" or degree of capacity utilization of transponders on any given spacecraft, so long as variable costs are not significantly affected by growing levels of communications traffic. As discussed below, these cost characteristics predispose satellite licensees to implement specific behaviors that affect the nature of competitive rivalry observed in communications satellite services markets.

48. The size of a communications satellite firm also reflects economies in coordinating the use of inputs to produce satellite communications services. As noted previously, a firm requires a minimum of three spacecraft to achieve global coverage and connectivity. In other words, a satellite operator hoping to provide global coverage is, at a minimum, a three-plant firm. It is possible, however, to operate by leasing all transponder capacity without owning any spacecraft, and many satellite operators lease some transponder

[51] The period of DOL measurement differs from one carrier to the next reflecting data availability, but this difference is of no analytical consequence.

[52] The notion of a firm used in the following discussion reflects an economic rather than legal orientation. As an economic concept, the firm is, in effect, a cost-minimizing coordination mechanism that substitutes managerial direction for market contracting, such as using corporate employees rather than contract workers, wherever it is cheaper to do so. This transaction cost or "incomplete contracting" view of the firm is advanced in Oliver E. Williamson, THE ECONOMIC INSTITUTIONS OF CAPITALISM (The Free Press, 1985).

[53] *See First Report*, 22 FCC Rcd at 5982-83, ¶ 89.

[54] Economies of density are realized if average cost falls as the quantity of output produced expands, holding constant the maximum productive capacity of the plant. Economies of density are sometimes referred to as a special type of "economy of scale," where capacity is fixed. *See*, *e.g.*, Ronald R. Braeutigam, Andrew F. Daughety, & Mark A. Turnquist, *A Firm Specific Analysis of Economies of Density in the U.S. Railroad Industry*, 22 J. INDUST. ECON. 3-20 (1984). In this *Second Report*, economies of scale refer only to reductions in the average cost of production as *both* output *and* plant capacity are expanded.

capacity even if they own multiple spacecraft. Given the technical complexity of satellite communications and the dynamic character of demand facing satellite operators, it is frequently cheaper to internalize the many transactions between and among spacecraft that are needed to monitor satellite operations, reallocate transponder capacity, and address service interruptions or outages rather than achieve these results by market contracting.[55]

b. Implications of Industry Cost Structure for Competition in Communications Satellite Services

49. The foregoing discussion of the characteristics of the cost structure for communications satellite firms suggest several implications for long term industry structure and conduct.

50. Substantial Business Risk. Both incumbent firms and entrants in the communications satellite services industry face substantial business risk, *i.e.*, variability in earnings attributable to fluctuations in demand, variability of output and input prices, and the pervasiveness of fixed costs in the firm's cost structure.[56] Given this pervasive business risk, communications satellite operators attempt to stabilize sales revenue over time and reduce business risk by encouraging customers to lease transponder capacity for relatively long periods of time, such as five, ten, or fifteen years at substantially reduced unit rates for longer commitments. As a result, it is not unusual for a communications satellite carrier to have well in excess of half of its annual revenues attributable to long term leases and only a relatively small proportion of revenues attributable to very short term or spot market transponder transactions. Such pricing behavior is a direct consequence of the cost structure and degree of operating leverage observed in the communications satellite industry.

51. Trend Toward Larger Firm Size. The discussion of plant-level and firm-level economies in the contemporary communications satellite industry shows the benefits of large traffic volumes and expansion of firm size for coordinating more complex transponder applications on a global scale. The formation of joint ventures and partnerships together with a number of mergers of satellite networks are consistent with industry re-organization focused on achieving economies of density, scale, and scope. Given the constraints on spectrum availability and orbital locations in both the fixed and mobile satellite market segments, it is difficult today to enter the communications satellite industry as a facilities-based satellite carrier. As firm size tends to become larger in the communications satellite industry, market concentration in certain relevant satellite service markets will necessarily increase.

4. Industry Dynamics

52. Significant shifts in market demand and supply over time often result in persistent excess supply of transponder capacity. This tends to exert downward pressure on transponder

[55] For more on the firm and market contracting as alternative means of coordination of resource use, s*ee* R. H. Coase, *The Nature of the Firm* 4 ECONOMICA 113-28 (1937).

[56] More generally, the variability of a firm's earnings relative to revenues depend on both business risk, as measured in terms of operating leverage, and *financial risk*, the extent that the firm uses debt financing. The use of debt financing obligates the firm to make both interest and principal payments regardless of the current profitability of the enterprise. Such fixed financing commitments directly affect the amount of earnings available to common stockholders and thereby increases the risk to such shareholders as the firm increases the proportion of debt in its capital structure.

lease rates, at least on the margin.[57] This outcome may depress price-cost margins in communications satellite services markets where excess supply is especially pronounced, making the entry investment decision less attractive. The following paragraphs identify factors which may induce substantial fluctuations in both market demand and supply of communications satellite services.

53. Different factors can cause shifts in the demand for communications satellite services. For example, demand for network services may reflect more stable long term trends in the growth of telecommunications services. The discussion here is not comprehensive, reflecting instead the identification of general factors that tend to induce fluctuations in the market demand for communications satellite services.

54. As identified in the *First Report,* several factors tend to induce fluctuations in the market demand for communications satellite services. First, the substitution of fiber optic transmission facilities, both terrestrial and undersea cables, for communications satellite services may reduce market demand as new fiber optic facilities are built and brought into service. The demand instability induced by this substitution effect may be offset to some extent in cases where transponder capacity is a complement to the transmission services provided by fiber optic transmission facilities. For example, transponder capacity may be used in tandem with fiber optic cables to provide path redundancy for highly critical telecommunications services, *i.e.*, telecommunications traffic that for business or security reasons cannot be disrupted, or used as standby service restoration capacity.[58] Second, shifts in demand may result from purchasing policy decisions of major customers of communications satellite services. Procurement decisions by such large customers to renew or cancel expiring transponder leases or build their own satellite capacity will induce shifts in market demand and have a significant effect on existing inventories of transponder capacity, thereby increasing or decreasing excess transponder capacity in specific markets.

55. Third, new applications in communications satellite services will produce demand for transponder capacity. Such growth in the market demand for communications satellite services will depend, however, on how rapidly consumers adapt to the introduction of new satellite-based services and on macroeconomic conditions, such as recurring business cycles that can slow or reverse the pace of demand growth.

a. Dynamics of Market Supply

56. Fluctuations in market demand do not necessarily induce sustained market disequilibrium if market supply can adapt reasonably quickly. Rapid supply adaptability ordinarily requires that investment in productive capacity can be easily expanded or contracted in small increments. To a great extent, capacity expansion by satellite carriers involves long lead times to plan, design, and finally launch new spacecraft. It also depends on forecasting future market demand over a long time horizon, often ten years or longer. Additionally, given the substantial, sunk costs of launching a spacecraft into orbit, it is economical to build spacecraft with a large number of transponders, since the unit launch cost per transponder falls with each

[57] A clear, elementary textbook discussion of market adjustment and equilibrium is provided by Earl L. Grinols, MICROECONOMICS at 59-60 (Houghton Mifflin, 1994).

[58] Increasingly, it appears that transmission restoration capacity is being provided by other fiber optic transmission facilities rather than satellite transponder capacity.

additional transponder.[59] The characteristics of industry cost structure previously discussed and the economics of capacity expansion in the communications satellite industry imply that substantial excess transponder capacity will tend to persist through time.

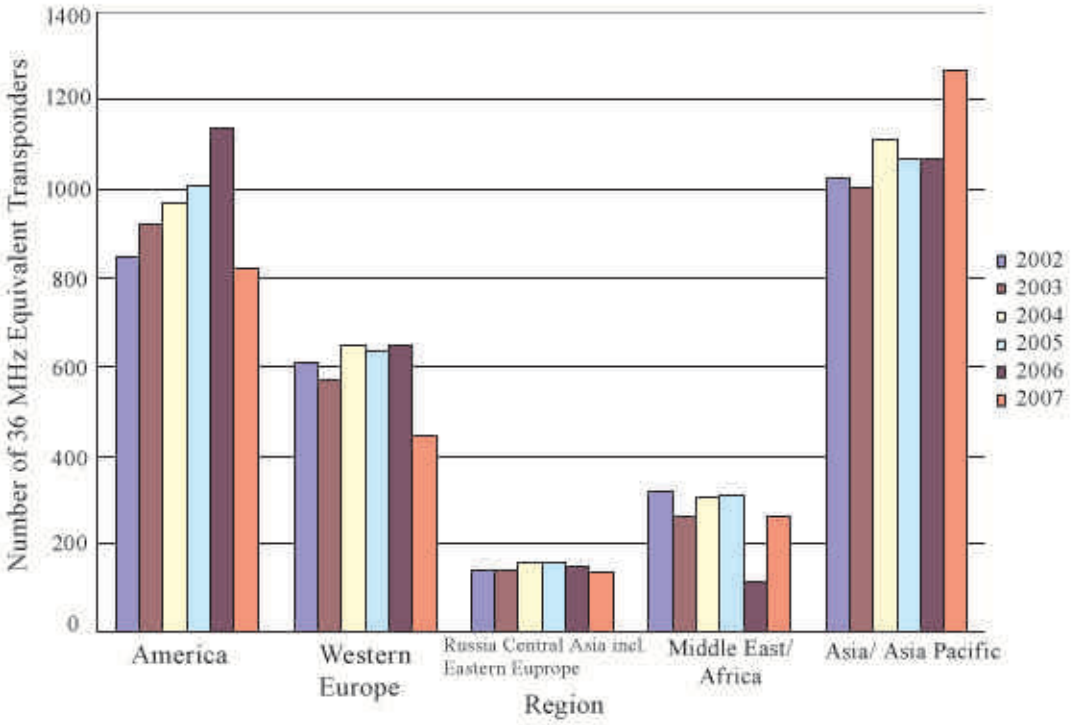
57. The quantitative significance of excess transponder supply over time is shown in the following Charts, which are updated from the *First Report.* These charts report a time series of excess transponder supply by regions around the globe from year 2000 through 2007.[60] While recognizing some limitations to the data, the data reflect a consistency of on-going excess transponder supply over time across different regions of the globe.

[59] The cost of launching a spacecraft into geostationary orbit may be as much as $90 million depending on the launch vehicle used and the current cost of launch insurance.

[60] The data for year 2007 were furnished by Futron Corporation. Data for earlier years were supplied by Euroconsult for the *First Report.*

CHART 1

WORLDWIDE EXCESS TRANSPONDER SUPPLY



Source: Futron Corporation and Euroconsult.

CHART 2

Source: Futron Corporation.

58. As noted in the foregoing discussion, the persistence of excess transponder capacity is not surprising given the lumpy nature of capacity expansion in the communications satellite industry and the favorable economics of expanding transponder capacity by large increments. Persistent excess capacity predisposes the communications satellite industry to a certain amount of inherent but predictable economic instability, *i.e.,* recurring imbalances between supply and demand, which satellite operators must and do anticipate. Satellite carriers appear to have adapted to the intrinsic dynamics of the industry and have implemented specific behaviors intended to offset to some extent the adverse economic and financial effects of persistent economic instability.

b. Behavioral Adaptations to Market Instability

59. The *First Report* identified several behaviors that satellite operators, especially fixed satellite service providers, have implemented over time to moderate the economic shocks induced by the intrinsic market instability.[61] We summarize these behaviors to explain how structural attributes of the communications satellite industry, *i.e.*, market instability induced by fluctuations in market demand and persistent excess supply of transponder capacity over time, requires satellite firms to implement certain behavioral strategies. In broad terms, incumbent satellite firms adopt behaviors that are intended to shift onto their customers a substantial portion of the risk of capital recovery of sunk investments in spacecraft and network infrastructure.

[61] *See First Report,* 22 FCC Rcd at 5985-88, ¶¶ 99-105.

Successful risk-shifting evens out current and future revenue flows for the carrier and are more predictable one year to the next, even if market demand and supply are volatile. An important strategy for implementing such risk shifting is offering customers extremely attractive lease rates for long term leases of transponder capacity, such as ten or fifteen year contracts. These long term leases may reflect very steep discounts relative to short term leases, and very attractive volume discounts for both leasing large transponders and multiple transponders at the same time.[62] For transponder leases that stretch over the expected useful life of the satellite, the lease is virtually the equivalent to an outright sale of capacity where the purchaser accepts the entire risk of recovering the investment cost of the transponder.

60. Other strategies for managing the potential adverse financial and economic effects of market instability include both horizontal and vertical integration. For example, the acquisition of a competing satellite carrier may broaden the opportunities for achieving both economies of scale and scope as firm size increases. Additionally, the risk of lost revenue in the event of cancellation or failure to renew an expiring transponder lease is reduced if the merging satellite carriers have transponder capacity capable of supplying satellite services in the same relevant market. Formerly competing transponder capacity becomes more a complement rather than a substitute for customers. As a result, the risk of revenue loss for the post-merger carrier is reduced relative to the separate, pre-merger carriers, and the customer has a new option for coordinating the usage of a greater quantity of transponder capacity within a single carrier enterprise.[63]

61. Vertical integration is an additional strategy for enhancing revenue stability and fostering long term customer loyalty. In wholesale markets, a satellite operator may have a strong economic incentive to integrate vertically with spacecraft manufacturers or critical input suppliers, such as network management and ground segment vendors, to reduce the risk that such inputs are not available when transponder capacity must be expanded or restored in the event of transponder failure. Such integration reduces the potential loss of customers and customer revenue if actual market demand is significantly greater than anticipated by the capacity planning process or if technical problems degrade either the continuity or quality of transponder services.

62. As discussed in the *First Report,* satellite operators pursue additional strategies to moderate the adverse effects of market fluctuations, manage the risk of capital recovery, and otherwise cope with the intrinsic economic instability of the communications satellite industry. Although the discussion here is not exhaustive, it illustrates the type of behavior that satellite operators implement to buffer the effects of economic instability while competing for customers. The Market Conduct section of this *Second Report* discusses satellite operator behavior in more specific terms with respect to both retail and wholesale markets, especially the pricing of communications satellite services.

---

[62] In other words, satellite operators tend to employ non-linear rate structures. For a thorough discussion of the theory of non-linear pricing, *see* Robert B. Wilson, NONLINEAR PRICING (Oxford University Press, 1993).

[63] The consumer benefits of improved transponder choice and service coordination could be offset if the post-merger satellite carrier raises transponder lease rates and attempts to restrict capacity availability to create contrived scarcity. If, however, such attempted exercise of market power which negates the consumer benefits of improved choice of capacity and improved coordination is highly likely following the merger, then it is also highly likely that competition authorities would not have approved the merger in the first place.

5. U.S. Government Policies and Actions

a. Spectrum Allocations and Orbital Locations

63. Entry into satellite communications requires radio spectrum licenses and orbital slots. Although technological advances have steadily increased the ability to fit more users into any given band, radio spectrum remains a finite resource. To address the fact that spectrum is scarce, the Commission has progressively implemented a more flexible, market-oriented model of spectrum assignment for commercial satellite services.[64] Lastly, the Commission has made it easier for licensees to sell their licenses and made possible a secondary market for satellites in which satellite bandwidth can be put to more efficient uses in response to changing market conditions and consumer demands.[65] The net effect of these flexible, market-oriented procedures has been to help reduce entry barriers that may arise from government regulation of spectrum. These Commission actions are explained in more detail in our *First Report*.[66]

b. U.S. Government Policy About Market Entry

64. The United States market for satellite services is open to market entry by foreign satellite operators. The Commission has approved many foreign-licensed satellites for domestic communications,[67] and such foreign satellite service providers are active market participants in the United States. These approvals have been pursuant to the satellite market-opening commitments made by the United States in the World Trade Organization's ("WTO's") Agreement on Basic Telecommunications.[68] The Commission has also allowed entry into U.S. markets by satellites of non-WTO members and services not covered by its agreements.[69]

---

[64] In 2003, the Commission substantially revised the procedures for considering license applications, which had been in place since 1983. *Amendment of the Commission's Space Station Licensing Rules and Policies,* First Report and Order and Further Notice of Proposed Rulemaking, 18 FCC Rcd at 10760 (2003) ("*First Space Station Reform Order"*). A key component of the *First Space Station Reform Order,* was to adopt different processing procedures for each of the two kinds of orbits characterizing satellite systems: geostationary satellite orbit ("GSO") – like systems and non-geostationary satellite orbit ("NGSO") -like systems. A "first-come, first-served" licensing approach was adopted for GSO-like systems. With this more flexible first-come, first-served approach, the Commission has reduced the average processing time for qualified new space station applications from several years to less than four months. For NGSO-like satellites, when an NGSO-like application is filed, and it is not technically incompatible with any licensed system or previously filed NGSO-like application, the Commission issues a public notice inviting interested parties to file competing applications to be considered together with the first application. The available spectrum is then divided equally among the qualified applicants. The Commission, among other things, also replaced its financial qualification requirement with a bond requirement and streamlined the replacement satellite application procedure. The net effect of these changes has been a more efficient and flexible model of spectrum assignment.

[65] *First Space Station Reform Order*, 18 FCC Rcd at 10841, ¶ 215.

[66] *First Report,* 22 FCC Rcd at 2987-88, ¶¶ 106-12.

[67] Foreign operated satellites listed on the Permitted Space Station List may be accessed by almost all U.S.-licensed earth station. *See Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, First Order on Reconsideration, 15 FCC Rcd 7207, 7213-16, ¶¶ 13-20 (1999). An unofficial list of satellites on the Permitted Space Station List is available at http://www.fcc.gov/ib/sd/se/permitted.html.

[68] The WTO was established pursuant to the *Marrakesh Agreement Establishing the World Trade Organization*, 33 I.L.M. 1125 (1994).

[69] *See EchoStar Blanket Authorization*, *EchoStar Satellite, LLC For Blanket Authorization to operate 1,000,000 Receive–Only Earth Stations to provide Direct-to-Home Fixed Satellite Service in the United States using the*

(continued….)

Finally, the Commission established a Permitted Space Station List procedure by which many non-U.S. licensed satellite operators providing FSS in the C- and Ku-bands have acquired authority to provide space segment capacity in the United States.[70] These U.S. government actions and policies are described in more detail in the *First Report*.[71]

6. Foreign Administrations' Policies and Actions

65. In directing the Commission to prepare this Report, Congress requested that the Commission compile "a list of any foreign nations in which legal or regulatory practices restrict access to the market for satellite services in such nation in a manner that undermines competition or favors a particular competitor or set of competitors."[72] As directed by Congress, we requested comment on "the legal or regulatory practices of foreign nations that have the effect of restricting access to that nation's market for satellite services." We also asked commenters to tell us "what types of legal or regulatory practices hinder U.S. firms from fully participating in a given foreign market" and if there are "legal or regulatory practices that favor a particular competitor or set of competitors."[73]

66. As the Commission noted in the *First Report,* any review of the legal or regulatory practices of a foreign nation raises issues intimately related to the trade relationships of the United States with other sovereign nations. Foreign relations, including communications-related agreements, fall under the domain of the Executive Branch. It is beyond the role of the Commission to determine whether foreign nations' laws and regulations are or are not in compliance with any obligations under trade agreements with the United States or other international law.[74] Consequently, the discussion in this section and the attached Appendix is brief and may not represent the views of the Executive Branch.

67. Based upon the record in this proceeding[75] we identify seven broad types of market barriers established by foreign nations that may discourage entry by U.S. satellite operators or satellite service providers:

- Lack of Transparent, Non-Discriminatory and Timely Licensing Procedures;
- No National Treatment (*i.e.,* Most Favored Nation Status) for U. S. Satellite Operators;

(Continued from previous page)
Canadian-authorized ANIK F3 Satellite at the 118.7 W.L. Orbital Location, Order and Authorization ("*EchoStar Blanket Authorization*"), 20 FCC Rcd. 20083, 20087-89, ¶ 14 (2005).

[70] *See, e.g., Telesat Canada, Petition for Declaratory Ruling for Inclusion of ANIK F1 on the Permitted Space Station List*, File No. SAT-PDR-20000420-00083, Order, 15 FCC Rcd 24828 (2000); *See Telesat Canada, Petition for Declaratory Ruling for Inclusion of ANIK F2 on the Permitted Space Station List and Petition to Serve the U.S. Market Using Ka-band Capacity on Anik F2*, 17 FCC Rcd 25287 (2002).

[71] *First Report,* 22 FCC Rcd at 5988-91, ¶¶ 113-17.

[72] 47 U.S.C. § 47 U.S.C. § 703(b)(3).

[73] *Notice*, 22 FCC Rcd at 19433.

[74] *First Report,* 22 FCC Rcd at 5992, ¶ 121.

[75] SIA filed Supplemental Comments on January 4, 2008, to include SIA's December 20, 2007, submission to USTR that addressed market access issues for satellite services in a number of WTO member or candidate countries pursuant to section 1377 of the Omnibus Trade and Competitiveness Act of 1988 (19 U.S.C. 3106).

- Prohibitions on U.S. Satellite Operators Transporting Broadcast Video Signals and Associated Audio Signals;
- Requirements for Local Presence or a Local Partner;
- Requirements for Completion of the ITU Frequency Coordination Process Prior to Granting Market Access;
- Monopolies for Domestic Satellite Operators or Service Providers; and
- Requirement for Deployment of Specific Technologies.

The Appendix to this *Second Report* includes a list of the nations SIA identified as engaging in one or more of the foregoing market barriers to entry by U.S. satellite service providers. These barriers are described more fully in the *First Report*.[76]

E. Effect of Technology Change on Market Structure

68. Technological innovation plays a critical role in the state of competition within specialized telecommunications industries such as the commercial satellite communications sector. Advances in spacecraft technology, associated ground equipment, and in satellite services applications can dramatically affect the competitiveness of satellite as a delivery platform versus other wired or wireless platforms, as well as the strategic competitiveness of one firm versus another within the satellite industry. Technological changes can also permit the market entry of new service providers utilizing different technology platforms.

1. Spectrum-Efficient Technology

69. Recent technological advances have enabled more efficient reuse of spectrum, thereby effectively increasing the number of satellite providers that may participate in a given market. For example, advancements in satellite antenna technology have created the possibility of satellite spot beams that can be shaped to fit particular service areas or markets.

70. In addition, advancements in satellite beam forming technology have provided for the use of more efficient spot-beam architecture, thus eliminating the need for complex beam forming processors aboard the satellite, making room for other necessary and more sophisticated processors on board the satellite. Finally, the capability of providing "on-board processing"[77] enables wide regional or even global single-hop connectivity between distant earth stations dispersed across wide regions or across much of the Earth. Moreover, on-board processing systems can adapt quickly to changing data throughput and system loading demands. On-board processing systems can achieve higher service speed and throughput capacity, and can support the type of fully-meshed connectivity that is necessary for peer-to-peer communications.

[76] *First Report*, 22 FCC Rcd at 5991-96, ¶¶ 118-37. Note, this Report includes one additional barrier, the "Requirement for Deployment of Specific Technologies," from last year's Report. *See* SIA's Supplemental Comments, Attachment of Letter to USTR at 3.

[77] On-board processing payload systems generally function as intelligent signal routers, directing traffic between spot beams in a satellite or to another satellite within an operating constellation.

2. Emergence of Mobile Applications in the FSS

71. One phenomenon in the satellite industry that has emerged in recent years is the increasingly widespread interest in having mobile applications in the FSS. These mobile applications include Airborne Mobile Satellite Service ("AMSS"), Earth Stations on Vessels ("ESVs") and Vehicle-Mounted Earth Stations ("VMES"). ESV service is operational, with licensing and service rules already in place. ESV operators provide broadband service to vessels in the C- and Ku-bands. AMSS and VMES are emerging mobile applications in the FSS. AMSS encompasses broadband service to passengers and crew on airplanes in the Ku-band, and VMES encompasses broadband service to motorized vehicles in the Ku-band and extended Ku-band. These services represent a nontraditional use of FSS spectrum that allows the mobile provider flexibility in spectrum use as long as its operations do not cause harmful interference to adjacent satellites and other service providers in the FSS bands.

IV. MARKET CONDUCT

72. In this section, we examine the conduct of satellite operators as they compete for customers. In particular, we focus on the current pricing behavior of satellite operators in both wholesale and retail markets for satellite communications services. The conduct implications flowing from the particular attributes of industry cost structure were discussed in Section III.D.2 and are not repeated here. Rather, the nature of pricing conduct by satellite licensees is emphasized, since the dynamics of actual pricing of transponder capacity have a direct effect on observed metrics of market performance. In general, pricing behavior in retail markets tends to reflect uniform pricing of communications service to all consumers taking the same service package, notwithstanding periodic promotional pricing offers to increase subscribership or reduce churn. By contrast, pricing behavior in wholesale markets for transponder capacity reflects the outcome of bilateral bargaining between the satellite service provider and the customer. As a result, different customers pay very different prices per increment of capacity depending on the length of the lease, the type of capacity and its orbital location, beam coverage, the prevailing extent of excess capacity in the relevant market, and the strength of the bargaining power of the customer and the satellite carrier.

A. Wholesale Markets

73. In the wholesale markets for leased transponder capacity, observed pricing behavior by satellite operators reflects bilateral negotiations, or bargaining, between a relatively small number of frequently large and specialized buyers and an even smaller number of satellite operators. Given the highly specific circumstances surrounding most negotiations between satellite operators and their wholesale customers, it is difficult to characterize this bargaining behavior in general terms. Indeed, industry analysts describe each negotiated transponder lease deal as a "snowflake," since no two negotiated deals are exactly the same.[78]

74. While each negotiation for a lease of transponder capacity is ultimately unique, certain attributes of the negotiation process appear to be similar from one transaction to another. In addition to lease rates, lease negotiations will typically include transponder power levels, geographic coverage, operating frequencies, location of satellite capacity in geostationary orbit, and quantity of bandwidth available in specific geographic regions. In addition to these technical matters, lease negotiations will also address a number of commercial issues, including the terms

[78] Telephone interview with satellite industry consultants at the Futron Corporation on April 21, 2008.

and conditions of the lease contract, payment schedules, contract cancellation penalties, other legal issues, and various aspects of service delivery, including the nature and extent of customer support following execution of a transponder lease.

75. Buyers of satellite communications services are often offered substantial price discounts for leasing large quantities of transponder capacity for long periods of time, up to the operational life of the satellite. At present, discounts for leasing multiple transponders over multiple years may range from 30 to 40 percent relative to the lease rates for partial transponders for short time commitments.[79] As a result, negotiated transponder leases for "large buyers" will tend to differ in important respects from leases negotiated by "small buyers."

76. Given the uniqueness of each transponder lease agreement and the lack of public information on the specifics of such private contracts, it is difficult to characterize pricing trends for transponder capacity since release of the *First Report.* Satellite industry consultants at the Futron Corporation have indicated to Commission staff, however, that lease rates for Ku-band transponder capacity for contracts extending three to five years have increased by approximately 10 percent over the last 12 to 24 months. According to Futron, this price increase reflects, among other things, the increased demand for transponder capacity for video distribution, and the reduction in excess capacity for video applications in certain geographic regions around the globe. Similarly, lease rates for C-band transponder capacity have also increased approximately 10 to 15 percent over the same period, reflecting some reduction in excess C-band capacity in certain geographic regions, attributable in substantial part to an increase in demand for cell phone backhaul applications.[80] Notwithstanding these increases in lease rates for transponder capacity, it is unlikely that such price increases will adversely affect to any significant extent the metrics of market performance reported below. As explained previously, satellite carriers have strong economic incentives to negotiate long term leases with their customers as a way to manage the substantial risks of capital recovery implied by their large investments in sunk cost assets.

B. Retail Markets

77. As noted in the *First Report,* the observed conduct of satellite licensees competing in markets for retail satellite services differs substantially from the observed conduct of satellite licensees competing in wholesale markets for transponder capacity.[81] In wholesale markets, a relatively few firms compete for the transponder service business of relatively few buyers. In retail markets, a relatively few firms compete for the business of literally thousands or millions of customers for services. In retail markets, the personal bargaining relationship between buyer and seller where relative bargaining power determines contract outcomes as found in wholesale markets is replaced by an impersonal, mass market sales approach where all customers pay the same price for a given tier of audio or communications service for any contract period. While customers in wholesale markets are often highly knowledgeable of the technology of satellite communications and rely upon this technical knowledge in negotiating with satellite carriers for transponder capacity, customers in retail markets are less likely to be technically knowledgeable about satellite technology and find it of limited relevance in making a

[79] *Id.*

[80] *Id.*

[81] See *First Report*, 22 FCC Rcd 5998-6002, ¶¶ 146-58.

decision to subscribe to retail satellite services. Consequently, retail markets for satellite services resemble in many respects markets for consumer goods in general.

V. MARKET PERFORMANCE

A. Analytical Framework

78. In this Section, we evaluate how well satellite communications markets are performing for consumers. As in the *First Report*,[82] we measure performance by making a variety of economic measurements of the degree of competition and the presence of market power in different markets. For this *Second Report,* these metrics include measures of utilized capacity, profit-to-sales ratios, and the Lerner Index.

79. The measurement and assessment of market power in the communications satellite industry as an indicator of the extent or intensity of price competition is difficult. Virtually all business firms in virtually any industry can vary the price of output to some extent by adjusting the quantity of output produced. This poses no significant threat to competition and can be distinguished from circumstances where the exercise of significant market power adversely affects consumer welfare and price competition.[83]

80. A careful evaluation of firm own-price elasticities of demand, the market elasticity of demand, the elasticity of supply of rivals, market share, and other variables may be necessary to assess the extent of a firm's market power.[84] As a result, no single metric will ordinarily suffice to assess accurately the prevalence of market power that adversely affects, or might adversely affect, price competition in a relevant market. Rather, the assessment of market power must be interpreted within a framework or context which identifies the major structural attributes of the industry and expected conduct implied by such structural attributes. Additionally, standard indicators of market power rooted in the measurement of unit price-cost margins, such as the Lerner Index, are particularly difficult to interpret if the cost structure of the industry is characterized by large fixed costs and economies of scale.

81. As previously discussed, the cost structure of the communications satellite industry is marked by the pervasive fixed and sunk costs and economies of density and scale implied by the large investments in both space and ground segments. As a result, it is expected that marginal cost in both the short and long run will fall below average cost for significant ranges of output. It is reasonable to expect, therefore, that substantial markups over the marginal

---

[82] *See First Report,* 22 FCC Rcd at 6003-04, ¶¶ 160-67.

[83] For further discussion, *see* Louis Kaplow & Carl Shapiro, "Antitrust," *National Bureau of Economic Research Working Paper No. 12867* at 3-4 (Jan. 2007). The Lerner Index measures the extent that the output prices of a firm competing in a defined relevant market exceed the marginal cost of production and is a standard metric of the market power of a firm in a given industry. For simplicity, if it is assumed that the firm produces a single product or service, then the Lerner Index is given by the formula, $L = (p - c)/p$, where L is the Lerner Index; p measures the unit price of output sold by the firm; c measures the marginal cost of production; and $(p - c)$ measures the "price-cost margin." As an index number, the Lerner Index ranges from a high of 1 to a low of 0, where computed index numbers approaching one reflect greater market power and diminished price competition, while computed index numbers approaching zero reflect the general absence of market power and the presence of intense price competition. For example, under perfect competition where no firm has, or can exercise, any market power whatsoever, competitive output price just equals the marginal cost of production in market equilibrium, and the corresponding Lerner Index would be zero, since the price-cost margin is zero.

[84] *Id.* at 11-19.

cost of production will be observed in the industry. Given this complex economic environment, cost-price margins as an indicator of potentially harmful market power must be interpreted carefully in the communications satellite industry.

B. Data and Application of the Analytical Framework

1. Domestic Wholesale Markets

82. For wholesale satellite services markets, the available public data needed to conduct the analysis as discussed above are quite limited, in part because some market participants report their financial data as part of a larger corporate parent's filings and do not provide sufficiently disaggregated data. Other wholesale market participants are not publicly traded, and no data are publicly reported. As noted in the description of the markets for the various wholesale services, these markets typically involve relatively few large purchasers of capacity. Because they can effectively bargain with satellite operators (unlike the large number of individual consumers in retail markets), measures of market concentration such as HHIs lose the meaning they might lend to retail markets.[85]

83. Many satellite operators are not, and have not been in recent years, publicly traded companies. Others do not disaggregate their financial data from that of their corporate parent company. This makes computation of comparable performance indices impossible. Several firms that operate global systems, essentially of fixed satellites, provide detailed financial data, but only on a consolidated, global basis, and not separately for the U.S. domestic market. As the domestic market, however, generally accounts for approximately 25% of global wholesale satellite revenues,[86] we have computed the various financial measures, understanding that these measures based on globally consolidated data can only serve as proxies for domestic data. In addition, a number of operators entered bankruptcy during the study period (with some exiting), particularly those in the mobile satellite services market, creating a high degree of fluctuation for some metrics.

84. For this *Second Report*, therefore, we utilize data developed by the Futron Corporation for the capacity-related wholesale markets examined in this study. These data portray the use of transponders in the domestic market by the major operators prior to recent transactions (Table 4 below), as well as some globally consolidated financial data that can serve as proxy indicators (Tables 5 and 6) of competition in the domestic market.

[85] The Hirschman-Herfindahl Index (HHI) is a standard measure of market concentration often used in assessing the competitive effects of a proposed merger. *See Merger Guidelines,* Section 1.5. The HHI is based on the total number and size distribution of all firms in the relevant market. It is computed as the sum of the squares of the market shares of all firms competing in the relevant product and geographic market. As an index number, a computed HHI will range from near zero in a highly-fragmented market with many firms with very small market shares to 10,000 in a monopoly market with a single firm. For example, suppose a relevant market included just four competitors with market shares of 50, 35, 10, and 5. The HHI would be calculated as (50 X 50) + (35 X 35) + (10 X 10) + (5 X 5) = 3,850. According to the standards established in the *Merger Guidelines,* Section 1.51, this market is "highly concentrated."

[86] This estimate, provided by the Futron Corporation, includes revenues reported by U.S.-based satellite operators and takes into account that satellite operators do not consistently report transponder capacity sales and leases by country of service origination or destination.

a. Wholesale Market Shares

85. Given the cost characteristics and the dynamics of market demand, all wholesale market segments appear to be performing well. Our review of available data on shares of satellite capacity shows that the two merged firms (Intelsat/PanAmSat and SES/New Skies) held 69 percent of the domestic video transponders (contrasted to 81 percent last year) and 83 percent of transponders activated for network services (a reduction from 89 percent the previous year), with the remainder provided by Loral Skynet and other foreign-licensed operators. We find a positive profitability ratio for SES and a reduced loss for Intelsat. Lerner Index proxy measurements are consistent with longer term trends and do not necessarily indicate the existence of market power. This may be due to the wholesale customer's strong bargaining power in establishing price and ongoing price rivalry among the remaining firms in the wholesale market, as well as terrestrial competition in certain wholesale markets. We also note that participants in the Network Services markets continue to post significant revenues, even as they are experiencing increased competition from terrestrial providers where wireline solutions are geographically available.

86. As noted in the *First Report*,[87] the use of the HHI in markets in which there are few, large purchasers is of limited value due to the countervailing bargaining power between supplier and purchaser. Table 4 reports the major participants' shares of transponders activated in domestic markets.

TABLE 4

PERCENT OF DOMESTIC TRANSPONDERS ACTIVATED BY FIXED SATELLITE OPERATORS IN DOMESTIC WHOLESALE RELEVANT MARKETS

Operators	Video Contribution and Distribution (%)			MVPD (%)			Network Services (%)		
	2001	**2006**	**2007**	**2001**	**2006**	**2007**	**2001**	**2006**	**2007**
Intelsat	5	15	38	0	0	0	9	42	50
PanAmSat	33	29	N/A	0	0	0	10	13	N/A
Loral Skynet	23	3	2	0	0	0	25	3	3
SES Americom	33	34	27	0	14	8	37	25	25
SES New Skies	N/A	3	4	N/A	0	0	N/A	9	8
Other	7	15	28	0	0	0	20	9	14
DirecTV	0	0	0	67	52.5	59	0	0	0
EchoStar	0	0	0	33	33.5	33	0	0	0

Source: Futron Corporation

[87] *First Report,* 22 FCC Rcd at 5977, ¶ 71.

87. Profitability Ratios and Lerner Indices for Wholesale Markets. Using information derived from the operators' globally consolidated financial statements, we can examine time series financial statistics for the two merged operators that did not enter bankruptcy proceedings during the study period. Tables 5 and 6 below provide profitability ratios and Lerner Indices based upon operating cash flow for these major wholesale service providers.[88]

[88] Company price data necessary for a pure Lerner Index are not readily available. As a proxy for pricing data, we rely upon the ratio of operating cash flow to sales, or of free cash flow (operating cash flow minus investment) to sales reported in individual company financial statements.

TABLE 5

**PROFITABILITY RATIOS (PROFIT/SALES)
FOR MAJOR FIXED SATELLITE OPERATORS
IN DOMESTIC WHOLESALE RELEVANT MARKETS**

	2001	2002	2003	2004	2005	2006	2007
PanAmSat	0.0352	0.1047	0.1198	-0.0955	0.0845		
SES	0.5360	0.3921	0.3078	0.3646	0.3782	0.2607*	0.2508*
New Skies	0.1584	-0.0234	0.0549	-0.0243	N/A		
Intelsat	0.4603	0.2764	0.1914	-0.0371	-0.2777	-0.2217*	-0.0879*

Source: Company Annual Reports (10-Ks)
* = successor entity

TABLE 6

**PROXY LERNER INDICES
FOR MAJOR FIXED SATELLITE OPERATORS
IN DOMESTIC WHOLESALE RELEVANT MARKETS**

	2001	2002	2003	2004	2005	2006	2007
PanAmSat	0.1629	0.2801	0.2926	0.1366	0.4203		
SES*	0.6976	0.7795	0.7236	0.7658	0.5719	0.6563	0.7405
Intelsat	0.4610	0.3218	0.2766	0.1403	0.0369	0.2697	0.2551
New Skies	N/A	N/A	N/A	N/A	N/A		

Source: Company Annual Reports (10-Ks)
* = SES Global consolidated (SES Americom/New Skies not available)

88. As can be seen, earnings as measured by profitability ratios and Lerner indices in the wholesale markets are relatively high, but also highly variable. Further, the general trend in these measures for Intelsat/PanAmSat is downward. Both the variability and the trends in earnings are consistent with the earlier discussion of the bilateral negotiation nature of competition in the wholesale market. The downward trend in these metrics suggests an increase in rivalry for most wholesale services.

89. The degree of terrestrial competition faced by satellite providers varies significantly among wholesale markets. For Video Contribution and Distribution services, terrestrial alternatives have a limited competitive impact, because the economics of multi-point content distribution favor satellite technology, as does the inherently mobile nature of some Video Contribution activities. This may account, at least in part, for the relatively high values in the tables above.

90. As noted in the discussion in Section V.A., metrics of the unit price-cost margin, such as the Lerner Index, are difficult to interpret as indicators of market power and the extent of

competitive rivalry in industries where firms, such as satellite carriers, utilize technologies with large fixed costs and substantial economies of scale. The marginal cost of production for such firms ordinarily declines with the production of additional output and is below the average cost of production for output levels until capacity output is reached. Pricing output at marginal cost, the result ordinarily obtained in fully competitive markets where neither fixed cost nor economies of density or scale are important quantitatively, is therefore unprofitable for satellite firms, since such pricing will produce losses equal to the fixed costs of production.[89] If a Lerner Index equal to one is taken as evidence of the presence of market power and monopoly market conditions,[90] then the Lerner Indices reported in Table 6 are considerably less than one and are broadly consistent with a finding of rivalrous market conditions.[91]

91. It is noted that the negative profitability ratios for Intelsat and New Skies reported in Table 5 are not inconsistent with the positive Lerner Indices reported in Table 6. The profitability ratios reported in Table 5 are based on accounting data on expenses, not economic cost, and are sensitive to the firm's capital structure decisions, *i.e*., the relative significance of debt financing versus equity capital. For example, increasing the total indebtedness of the firm will increase the firm's expenses and reduce reported profit, all other things remaining the same, since interest cost is an expense item while dividends paid, if any, are not Such changes in the capital structure of the firm need not have any effect, however, on the firm's price-cost margins, the basis of the Lerner Index.

92. Little company-specific data are available for market participants in these wholesale markets, which includes the provision of satellite capacity for telecommunications backbone services, as well as satellite-based communications services using VSAT and teleport services. The allocation of satellite capacity for these services is indicated above in Table 4, revealing disparate emphasis among the major operators on this sector.

93. It is clear, however, that terrestrial competition is making inroads into this market, which has been historically dominated by satellite. Increasingly, VSAT satellite operators are providing 'hybrid' networks to corporate customers that combine satellite and terrestrial components. This is particularly true for the corporate VSAT network sector, where both major

[89] Although, in theory, a Lerner Index that approaches zero in value is an indicator of the absence of market power and competitive market conditions, such lower bound estimates of a Lerner Index will not be observed in markets such as satellite communications. This is because the firm's unit price-cost margin, the basis of the Lerner Index, must be sufficiently large to ensure that revenues recover the substantial fixed costs of production. The Lerner Indices reported in Table 6 are broadly consistent with this financial requirement, *i.e*., the reported values exceed zero. For further discussion and explanation of this pricing anomaly, see Kaplow and Shapiro, "Antitrust," p. 4.

[90] For further discussion of the upper bound for a Lerner Index, see Carlton and Perloff, *Modern Industrial Organization,* p. 278. Briefly, as noted above, in a perfectly competitive market the Lerner Index would be zero and a monopolist maximizing profit would generate an upper bound for the Lerner Index of one.

[91] The reported Lerner Indices are also consistent with the limited exercise of market power that produces price-cost margins sufficient for the recovery of fixed costs.

market participants, Hughes and Gilat, offer such service.[92] Gilat includes a specific hybrid service, Connexstar DSL, in its service portfolio.[93]

2. Domestic Retail Markets

a. Fixed Satellite Broadband Services

94. As we noted in the *First Report,* two-way satellite-based fixed broadband service was first offered very recently, in 2005, and satellite-based broadband of all types represents less than one percent of the U.S. broadband subscriber base.[94] The sector does show growing subscriptions. According to the Commission's 2007 Report on High-Speed Services for Internet Access, the number of satellite based high-speed lines grew from June 2005 (376,837) through June 2007 (668,803).[95]

95. In the *First Report*, we identified the key players in this retail market, which we update herein. WildBlue began to offer service in June 2005 on a Canadian-licensed Anik F2 Ka-band satellite. The company's own satellite, WildBlue-1, was successfully launched in December 2006 and began service in March of 2007. Hughes, with the launch of Spaceway 3 in 2007 obtained the ability to provide high speed HughesNet Ka-band service. These additional satellites have greatly expanded satellite broadband capacity dedicated to the residential/Small Office Home Office market as all of WildBlue-1 and some portion of Spaceway are dedicated to that market.[96]

96. In addition, ViaSat announced plans for a launch in 2010 of a dedicated broadband spacecraft that will add significant capacity to the current level, and, as shown below in Table 7, have more capacity than the combined capacity of all existing broadband spacecraft.

TABLE 7

ESTIMATED CAPACITY ESTIMATED IN-ORBIT COSTS

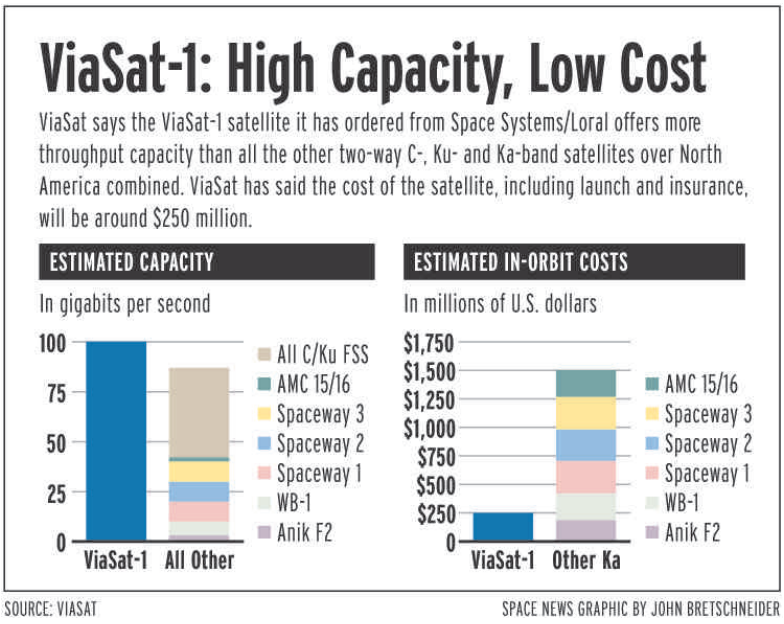
[92] A Hughes spokesman notes that 'we use the appropriate platform to meet the needs of our customers' and Gilat has formally teamed with Cisco for its VSAT Network Module. Jason Bates, *The Future of Private Networks: What Next for VSAT Systems*, Via Satellite (Aug. 2006).

[93] Spacenet's Portfolio of Services, available at http://www.spacenet.com/services/connexstar.asp (visited Aug. 9, 2006).

[94] *See* Federal Communications' Report *High Speed Services for Internet Access: Status as of June 30, 2007* (rel. March 19, 2008) at Table 1.

[95] *Id*

[96] *See also Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Fifth Report, ("706 Report"), 23 FCC Rcd cite 9615, 9629 n. 72.



97. NTIA in its "Networked Nation: Broadband in America, 2007," Report, provides the following summary of fixed satellite broadband services.[97] In the *First Report,* we included a table (Table 14) that provided a comparison of the current-satellite-based market participants' offerings. Since the time of the release of the *First Report*, NTIA released its Report which offers a more comprehensive overview of service offerings and prices charged than Table 14 in the *First Report.*

TABLE 8

COMPARISON OF SATELITE-BASED BROADBAND OFFERINGS

Company/ Service	'Up to' Upload speed	'Up to' download Speed	Monthly Service Price	Consumer Equipment Cost	Installation cost
Hughes www.hughes.com					
HughesNet Home Service	128 Kbps	700 Kbps	$59.99	$299.99	Included
HughesNet Professional	200 Kbps	1.0 Mbps	$69.99	$299.99	Included
HughesNet	200 Kbps	1.5 Mbps	$79.99	$299.99	Included

[97] NTIA, *Networked Nation: Broadband in America, 2007*, Table 5 at 23.

Professional Plus					
HughesNet Business for Small Office	300 Kbps	1.5 Mbps	$99.99	$599.99	Included
HughesNet Business Internet	500 Kbps	2 Mbps	$179.99	$599.99	Included
StarBand www.starband.com					
Residential	128 Kbps	1.0 Mbps	$69.99	$299.99	Not Included
Small Office	256 Kbps	1.5 Mbps	$99.99	$299.99	Not Included
WildBlue www.wildblue.com					
WildBlue for Home Value Pack	128 Kbps	512 Kbps	$49.95	$249.00	Included*
WildBlue for Home Select Pack	200 Kbps	1.0 Mbps	$69.95	$249.00	Included*
WildBlue for Home Pro Pack	256 Kbps	1.5 Mbps	$79.95	$249.00	Included*
WildBlue for Office Select Pack	200 Kbps	1.0 Mbps	$69.95	$249.00	Included*
WildBlue for Office Pro Pack	256 Kbps	1.5 Mbps	$79.95	$249.00	Included*
Inmarsat www.inmarsat.com					
Inmarsat BGAN	492 Kbps	492 Kpbs		Pricing depends on the individual distributor's offering and what value-added services are included	

* in some cases, WildBlue charges a $79.95 installation fee

98. **Subscriber Levels**. The following information about subscriber levels is based upon data reported by the companies. Hughes reported 375,000 total subscribers for North America, for the first nine months of 2007.[98] WildBlue reported 130,000 customers, in first quarter of 2007 and according to Broadband Reports, Wildblue has used all available capacity in the areas of eight states. This data indicates that satellite competition for broadband services continues to develop.

VI. ASSESSMENT OF COMPETITION AND CONCLUSIONS

[98] Presentation at annual conference, Hughes Investor Relations (Feb. 2008).

99. We find in this *Second Report,* as we did in the *First Report,* that markets for commercial communications satellite services are subject to effective competition, notwithstanding certain structural changes in the communications satellite industry since the release of the *First Report.* Additionally, consumers of communications satellite services continue to realize significant net benefits in terms of service choice, innovations fostered by technological change and improvements in both space and ground segment, and improvements in service quality. Observed metrics of market performance are consistent with good market performance, recognizing the constraints imposed by industry cost structure and persistent excess capacity.

100. For wholesale markets, the lumpy nature of investment in satellite capacity imparts a chronic tendency for market instability, where an imbalance between market demand and supply tends to persist through time. This market imbalance, most often reflected in an ongoing excess supply of transponders in various market segments, is predictable in many respects, and satellite carriers have implemented defensive strategies for ameliorating the adverse financial effects of such recurring market dynamics. Developments in the satellite sector are consistent with achieving and maintaining financial viability through time given the substantial, long term, fixed and sunk costs resulting from investment in communications satellites, and there is no evidence that such developments harm consumers or otherwise adversely affects rivalry among competitors in the communications satellite services.

101. Pricing behavior in wholesale markets continues to reflect in substantial part the relative bargaining power of satellite operators and their wholesale customers. As noted in Section IV.A, there is some evidence that absorption of excess capacity in some regions is resulting in some increase in transponder lease charges, especially for video applications. Such pricing adjustments are consistent, however, with adjustments in supply and demand over time and not an indicator of diminished rivalry in the relevant markets for communications satellite services.

102. With respect to retail markets, for reasons aforementioned, in this *Second Report* we only focus on the fixed satellite broadband service.[99] We find while there has been growth in this retail market, the segment remains small.

103. Finally, as we noted in the *First Report*, market entry conditions with respect to the regulatory environment have generally improved as a result of the *DISCO II Order* implementing the satellite market-opening commitments made by the United States in the WTO. As a result, the Commission has approved many foreign-licensed satellites to provide satellite communications services within the United States. Further, this *Second Report* identifies seven broad legal and regulatory barriers established by foreign nations that adversely affect entry by U.S. satellite operators in foreign markets for communications satellite services, and lists those countries identified as exhibiting these barriers.

VII. ADMINISTRATIVE MATTERS

104. This *Second Report* is issued pursuant to the authority contained in Section 703 of the Communications Satellite Act, 47 U.S.C. § 703.

[99] Also referred to as satellite-based Internet access in the Commission's 706 Report.

VIII. ORDERING CLAUSES

105. **IT IS ORDERED** that the Secretary shall send copies of this *Second Report* to the appropriate committees and subcommittees of the United States House of Representatives and the United State Senate.

106. **IT IS FURTHER ORDERED** that the proceeding in IB Docket No. 07-252 **IS TERMINATED.**

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX

List of Foreign Nations Raising Barriers to Market Entry by United States Satellite Providers

This Appendix is a compilation of foreign nations identified in the record in this proceeding as having legal or regulatory practices that may constitute market barriers for U.S. satellite companies.

Countries Identified as Lacking Transparent, Non-Discriminatory and Timely Licensing Procedures for U.S. Satellite Operators.

- Brazil
- China
- Egypt
- India
- Malaysia
- Russia
- South Africa
- Thailand
- Vietnam

Countries Identified as Not Providing National Treatment (*i.e.*, Most Favored Nation status) for U.S. Satellite Operators.

- Brazil
- China
- India
- Israel
- Kazakhstan
- Korea
- Malaysia
- Philippines
- Russia
- Saudi Arabia
- Vietnam
- Venezuela

Countries Identified as Not Permitting U.S. Satellite Operators to Transport Broadcast Video Signals and Associated Audio Signals.

- India
- Kazakhstan
- Russia

Countries Identified as Requiring a Local Presence or Local Partner for U.S. Satellite Operators.

- Bangladesh
- Brazil
- Israel
- Kazakhstan
- Mexico
- Philippines
- Russia
- Saudi Arabia
- Venezuela

Countries Identified as Requiring Completion of the ITU Frequency Coordination Process Prior to Market Access for U.S. Satellite Operators.

- Brazil
- Russia

Countries Identified as Having a Monopoly for the Domestic Satellite Operator.

- Egypt (duopoly)
- Kazakhstan
- Russia
- South Africa
- Thailand

Countries Identified as Requiring Deployment of Specific Technologies.

- Russian Federation
- India

CONCURRING STATEMENT OF
COMMISSIONER MICHAEL J. COPPS

Re: *Annual Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services,* IB Docket No. 07-252*,* Second Report

I respectfully concur in today's report for the same reasons I concurred in last year's. As I explained in greater detail at that time, I believe our conclusion of "effective competition" in the FSS market would be stronger if we were to define ahead of time what that term means and then looked at the data from 2007 to see if the market meets that definition. While I recognize that a primarily wholesale market such as FSS raises unique competitive issues, industry and the public can still benefit from a clear definition of what the statutory term "effective competition" means for such a market. I also believe that the Report's discussion of international competition could be more detailed and in keeping with what I believe the statute envisions.

CONCURRING STATEMENT OF
COMMISSIONER JONATHAN S. ADELSTEIN

Re: Second Annual Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services; Second Report; IB Docket No. 06-67

I must concur in this year's annual report on competition in the markets for domestic and international satellite communications services. While this report does a good job of describing methods of entry, cost structure and their implications for competition in this market, as I indicated with last year's report, I continue to be concerned that we lack the level of data granularity that would normally be associated with such a competition report. In short, because I am concerned with the picture of competition presented in the document, I concur.